THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID A. FREITAS

Appeal No. 97-3451
Application 08/325,832[1]

ON BRIEF

Before HAIRSTON, JERRY SMITH and LEE, Administrative Patent Judges.

LEE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-14 and 17-28. Claims 15 and 16 have been canceled. No claim has been allowed.

References relied on by the Examiner

Garuts	Patent No. 4,719,447	January 12, 1988
Cheung et al.	Patent No. 5,442,498	August 15, 1995

[1] Application for patent filed October 19, 1994.

(Cheung) (Filed Nov. 8, 1993)

The Rejection on Appeal

Claims 1-14 and 17-28 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Cheung and Garuts.

The Invention

Except for claim 22, which will be discussed separately, the invention is directed to a servo signal demodulator having a comparator circuit which generates a thermometer code. Independent claims 1, 8, 14, 25 and 26 are based on this general theme but are somewhat varied in content.

In independent claim 1, there is a data channel decoder that receives data channel thermometer code from the comparator circuit and generates data channel information, and a servo signal decoder which demodulates servo signal thermometer code from the comparator circuit. Similarly, in claim 25, there is a data channel logic circuit which receives data channel thermometer code from the comparator to generate a data channel value, and a servo demodulator circuit which receives servo signal thermometer code from the comparator to generate an output burst signal for servo control. Likewise, claim 26 is a method

claim including a step for providing thermometer code output from

the comparator to a data channel decoder and also a servo signal decoder.

Claims 8 and 14, however, are not so specific.

In independent claim 8, the thermometer code is used to generate a peak-to-peak value for a pair of data bursts, and the comparator circuit also generates a digital data channel value at a data channel rate independent from a servo pattern rate.

In independent claim 14, the thermometer code is further processed for providing decoded servo pattern burst binary data numbers for controlling a servo, but the comparator is not required to generate anything to send to a data channel decoder.

Finally, independent claim 22, on the other hand, does not even require that the output from the comparator be a thermometer code. According to this claim, it is only necessary that the comparator provides an output to a data channel logic circuit and a servo demodulator circuit.

Representative claim 1 is reproduced below:

1. A servo signal demodulator comprising:

a comparator circuit that receives an analog readback signal transduced by a head from servo data and user data recorded in a data track recorded on a storage medium and generates a thermometer code output corresponding to the analog readback signal;

a data channel decoder that receives data channel thermometer code information from the comparator circuit at a

first output rate and generates data channel information for transmission over a data bus;

a servo signal decoder that receives servo signal thermometer code information from the comparator circuit at a second output rate, demodulates it, and provides demodulated signal information to a servo controller.

Opinion

We do not sustain the rejection of claims 1-7, 25, and 26-28 under 35 U.S.C. § 103 as being unpatentable over Cheung and Garuts.

We sustain the rejection of claims 8-13, 14, 17-21, and 22-24 under 35 U.S.C. § 103 as being unpatentable over Cheung and Garuts.

Our opinion is based only on the arguments presented by the appellant in his brief. Arguments not raised by the appellant are not before us, are not at issue, and thus have not been considered.

According to the appellant, in this appeal, all rejected claims 1-14 and 17-28 stand or fall together (Br. at 5).

On page 6 of the brief, the appellant argues:

> As recited in all the independent claims, the analog readback signal is received and is converted to a thermometer code output, which is directly provided to the data channel and the servo decoder.

That the appellant considers the claimed invention as requiring a thermometer code to be provided to both a data channel decoder

and a servo signal decoder is further evident through the appellant's regarding claim 1 as being representative (Br. at 8) and also through the following text on page 8 of the brief:

> The claims support the distinction. Claim 1, for example, recites:
>
> > a comparator circuit that receives an analog readback signal . . . and generates a thermometer code output;
> >
> > a data channel decoder that receives data channel thermometer code information from the comparator circuit . . .; [emphasis in original] and
> >
> > a servo signal decoder that receives servo signal thermometer code information from the comparator circuit . . . . [emphasis in original]
>
> [a]ll of the independent claims contain similar limitations. The Cheung system does not include decoders for either the data channel or the servo signal that receive thermometer code information.

We note further that in the "Summary of Invention" section of the appeal brief, the appellant states (Br. at 5):

> From the comparator circuit 128, the converted readback signal is provided to a servo signal decoder 134 and then to a servo controller 127, and also is provided from the comparator to a data channel decoder 130, to a data channel logic circuit 132, and then to a "data channel bus" 124.

On the basis of the foregoing, it cannot be reasonably disputed that the appellant, at least in this appeal, has based his argument for patentability on the position that the claimed invention requires a thermometer code to be generated and

provided to both a data channel decoder and a servo signal decoder.

The argument, however, is not commensurate in scope with many claims on appeal. Specifically, it is noted that independent claims 8, 14, and 22, as well as the claims depending from claims 8, 14, and 22, do not require the providing of a thermometer code from anything to either a data channel decoder or a data channel logic circuit. In that regard, claims 22-24 do not even recite a thermometer code in any context. Accordingly, the appellant's argument is unpersuasive as applied to claims 8-13, 14, 17-21, and 22-24.

Independent claims 1, 25 and 26 do require that a thermometer code be provided from a comparator circuit both to a data channel decoder or logic circuit and to a servo signal decoder or logic circuit. The examiner states (answer at 3):

> Figure 1 [of Cheung] meets all the limitations of the claims, including showing asynchronous operation of the servo burst information and data channel information, except for showing the details of the "thermometer code" technique.

It is uncertain precisely what the examiner regards as the above-quoted "thermometer code" technique, but it is evident that Cheung does not disclose or suggest providing a thermometer code input to a data channel decoder and to a servo signal decoder. With regard to the "thermometer code" techniques, the examiner

relied on Garuts. On page 3 of the examiner's answer, it is stated:

> Garuts teaches the "thermometer code" flash A/D capability for A/D conversion for the purpose of minimizing cross talk among circuit signals. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Cheung et al. to be able to use the teaching of Garuts of the "thermometer code" A/D conversion capability in order to minimize cross talk.

The examiner's position is off the mark. The appellant's invention is not simply a flash A/D converter which first converts the input to a thermometer code and then generates a corresponding digital output. The invention at issue requires applying the intermediate thermometer code to a data channel decoder/logic circuit and also to a servo signal decoder/logic circuit. The examiner has pointed to nothing in Garuts which could reasonably have suggested sending the thermometer code itself to a data channel decoder/logic circuit or a servo signal decoder/logic circuit. On pages 7-8 of the appeal brief, the appellant correctly argues that "[w]ithout the guidance of the invention in terms of making use of the thermometer code output, one examining Garuts for application to Cheung would simply use Garuts before forming the conventional binary weighted sums and performing demodulation per Cheung." In other words, Garuts discloses a flash A/D converter, and one with ordinary skill in

the art would simply use Garuts' new and improved A/D converter in place of Cheung's more conventional A/D converter. But that, however, would not lead to the appellant's claimed invention as defined in independent claims 1, 25 and 26.

For the foregoing reasons, we sustain the rejection of claims 8-13, 14, 17-21, and 22-24. However, we do not sustain the rejection of claims 1-7, 25, and 26-28.

Conclusion

The rejection of claims 8-13, 14, 17-21, and 22-24 under 35 U.S.C. § 103 as being unpatentable over Cheung and Garuts is affirmed.

The rejection of claims 1-7, 25, and 26-28 under 35 U.S.C. § 103 as being unpatentable over Cheung and Garuts is reversed.

No time period for taking any subsequent action

in connection with this appeal may be extended under

37 CFR § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JERRY SMITH	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
JAMESON LEE	)	
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